

System	Sample	Initial	Final	Halogen	(cfu/ml)
NaOCl	I	7.5	0.05	1	$\leq 10^3$
	J	5.0	0.02	0.4	$\leq 10^3$
Dantochlor	K	3.0	0.00	0	$10^6$
	E	7.5	4.2	56	$\leq 10^3$
	F	5.0	3.4	68	$\leq 10^3$
	G	3.0	1.1	36	$\leq 10^3$
	H	1.0	0.83	83	$\leq 10^3$

As can be seen from the data, Dantochlor showed a fivefold efficacy increase over sodium hypochlorite, providing a greater than 3 log reduction at 1 ppm initial halogen compared to 5 ppm for sodium hypochlorite. Additionally, the consumption of active halogen by the pulp medium was much less where the Dantochlor was used relative to sodium hypochlorite.

What is claimed is:

1. A method of enhancing the efficacy of a free halogen-generating slimicide and reducing organic halogen by-products in an organic matter-containing circulating water system which comprises adding an N-hydrogen compound selected from the group consisting of p-toluene-sulfonamide, dimethylhydantoin, methylethylhydantoin, cyanuric acid, succinimide, urea, 4,4-dimethyl-2-oxazolidinone, and glycouril, directly to said system before or after the addition of the slimicide or with said slimicide in a mixture consisting essentially of the slimicide and said compound; wherein the N-hydrogen compound is added at a ratio sufficient to maintain a 0.1:1 to 10:1 mole ratio of slimicide to N-hydrogen compound in the circulating system, wherein at least 0.2 weight percent of said organic matter is present in said system, wherein the slimicide is chlorine gas, bromine, bromine chloride, an alkali metal or alkaline earth metal hypohalite, a halogenated hydantoin, a halogenated cyanurate, or halogenated cyanuric acid, and wherein said mixture of the N-hydrogen compound and the slimicide is present in said system in a slimicidally effective amount.

2. The method of claim 1 wherein the mixture of the slimicide and the N-hydrogen compound is formed just prior to the addition to said circulating water system.

3. The method of claim 1 wherein the slimicide is chlorine gas or sodium hypochlorite.

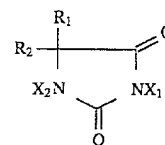
4. The method of claim 1 wherein from 0.1 to 10 ppm of active slimicide (expressed as  $\text{Cl}_2$ ) is maintained in the circulating water system.

5. The method of claim 1 wherein the circulating water system is used in pulp and paper processing or oil field applications.

6. The method of claim 1 wherein said organic matter is present in said system at from about 0.5 to about 3 weight percent.

7. The method of claim 1 wherein said organic matter is from about 95 to about 99 percent wood fiber.

8. The method of claim 1 wherein said slimicide is a halogenated hydantoin of the formula:



wherein  $R_1$  and  $R_2$  are independently selected from the group consisting of lower alkyl having 1 to 12 carbon atoms, and wherein  $X_1$  and  $X_2$  are independently selected from the group consisting of bromine, chlorine and hydrogen, and at least one of  $X_1$  and  $X_2$  being bromine or chlorine.

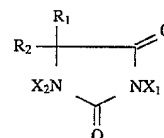
9. The method of claim 8 wherein said organic matter is from about 95 to about 99 percent wood fiber.

10. The method of claim 8 wherein said organic matter is present in said system at from about 0.5 to about 3 weight percent.

11. The method of claim 8 wherein the halogenated hydantoin contains bromochlorodimethylhydantoin.

12. The method of claim 8 wherein the halogenated hydantoin is a mixture of dichlorodimethylhydantoin and dichloroethylmethylhydantoin.

13. A method of enhancing the efficacy of a free halogen-generating slimicide and reducing organic halogen by-products in an organic matter-containing circulating water system which comprises adding an N-hydrogen compound selected from the group consisting of p-toluene-sulfonamide, dimethylhydantoin, methylethylhydantoin, cyanuric acid, succinimide, urea, 4,4-dimethyl-2-oxazolidinone, and glycouril, directly to said system before or after the addition of the slimicide or with said slimicide in a mixture consisting essentially of the slimicide and said compound; wherein the N-hydrogen compound is added at a ratio sufficient to maintain a 0.1:1 to 10:1 mole ratio of slimicide to N-hydrogen compound in the circulating system; and wherein at least 0.2 weight percent of said organic matter is present in said system, wherein said slimicide is a halogenated hydantoin of the formula:



wherein  $R_1$  and  $R_2$  are independently selected from the group consisting of lower alkyl having 1 to 12 carbon atoms, wherein  $X_1$  and  $X_2$  are independently selected from the group consisting of bromine and chlorine, and wherein the mixture of the N-hydrogen compound and the slimicide is present in said system in a slimicidally effective amount.

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